REMARKS

I.   STATUS OF THE CLAIMS

1.   Claims 1-55 are pending in the application.

2.   The term "author's algorithm" in the specification has been objected to by the Examiner . The term has been deleted from the specification as surplusage.

3   Claims 52-55 are objected to under 37 C.F.R. §1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 52-55 have been amend to overcome the objection .

4.   Claims 23-55 are rejected under 35 USC 112, second paragraph for indefiniteness . Claims 23-55 have been amended to overcome the indefiniteness.

5.   Claims 23 and 25-55 are rejected on the grounds of double patenting as unpatentable over USP 7, 333,300. Applicants have attached a Terminal Disclaimer to overcome the double patenting rejection.

6.   Claims 23 and 24 are rejected under 35 USC 102 (b) as unpatentable over USP 6,177,888 to M. A. Cabot et al, issued January 23, 2001 and filed September 8, 1999 (Hereafter, Cabot).

Applicants respond to the rejection of claims 23 and 24, as follows:

II.   Response to the Rejection of Claims 23 and 24:

1.   Claims 23 and 24 include elements not disclosed in Cabot and over come the rejection under 35 USC 102 (b), as follows:

    A.   Cabot 6,177,888:

    Cabot discloses systems and methods for providing an indication of proximity of an aircraft to a wake volume by tracking the trajectory of the wake-producing aircraft, which corresponds to the trajectory of the wake volume assuming the air is still. Preferably, the wake volume trajectory is then adjusted to account for the effect of local wind velocity on the wake position. A distance from the aircraft to the wake volume is determined, and preferably a closure rate and time to closure between the aircraft and the wake volume are also determined. A caution or warning is then provided if the distance or time to closure is less than a predetermined threshold.

Cabot provides an aircraft an indication of proximity to a wake volume by (1) storing the position and time of a nearby aircraft; (2) storing data points of the nearby aircraft trajectory; (3) adjusting the trajectory data points to account for the effects of local wind; (4) calculate the wake volume width and height and; (5) calculate the distance to the wake;(5) calculate a closure rate based on the differentiated distance to the wake volume; calculate a closing time to the wake volume; (6) determine if the closure time exceeds 30 seconds then increment the current time; (7); (8) determine if the closure time is less than 30 seconds and greater than 15 seconds issue a caution, and (9) if the closure time is less than 15 seconds issue a warning.

C.   Baranov et al Disclosure:

An Integrated System For Vortex Safety includes (1) an aircraft information subsystem, is able to fix, save, and provide the user with information concerning the aircraft position; (2) a wake vortex information subsystem, which is able to fix, save, and provide the user with information concerning wake vortex generators located in the aircraft vicinity;(3) an environmental information subsystem, which is able to fix, save, and provide the user with information concerning environmental conditions in the vicinity area of the aircraft at the current and forecasted time; (4) a warning subsystem alerting the users against the possibility of the aircraft encountering with wake vortex danger areas generated by a vortex generator with respect to a control plane perpendicular to the aircraft path and the forecasted time chosen by the users; (5) a user subsystem capable at least of fixing, saving, and indicating information received from other subsystems for the user and forming a signal recommending the aircraft evasive maneuver during the chosen by the user period of time after the warning, received by the user, on the possibility of entering the vortex generator wake vortex danger area at the forecasted time; and (6) a communication subsystem providing the integration of the subsystems in a single complex.

Baranov informs pilots about a possibility encounter with a vortex by (1) a vortex information system indicates the presence of aircraft wake vortices in the aircraft vicinity. at the current time according to danger criterion (s) chosen by the pilot; (2) the trajectory point coordinates and flight velocity of the wake vortex are stored; (3) the trajectory and intensity of the wake vortex are calculated; (4) the geometry of the vortex danger area at the time is calculated; (4) a delay time at the current time; a delay distance to control plane and a forecasted time are calculated; (5) the coordinates of the intersection points of the vortex and the control

plane at the moment of time + delta (t) are calculated ; (6) the coordinates of the vortex area of the aircraft forecasted positions, warning area and the danger area of the vortex at the aircraft frame are calculated; (7) visualization of the area of the aircraft forecasted positions and the wake vortices danger area are displayed the pilot, and (8) a warning indication is provided of nulling the distance from the area of the aircraft forecasted position to the vortex danger area.

D.   Claim 23 and 24 include elements, as follows:

(i)   an informational subsystem (1) of ~~the~~ an aircraft parameters capable of receiving, saving and providing ~~the~~ a warning system and a user with including information on the aircraft configuration, position, flight velocity, and attitude;

The Examiner cites positioning unit 28 of Cabot as describing the claimed element (i). The positioning system provides information to waking tracking system 29, whereas applicants' subsystem provides the positioning information to a subsystem (4), as described in applicants' specification at page 5, lines 23-24 and functions differently than the Cabot positioning system.

(ii)   an informational subsystem (2) of vortex generators capable of receiving, saving and providing the user with information on vortex generator configuration, position, flight velocity, and attitude for all vortex generators located in the aircraft vicinity;

The Examiner cites a wake trajectory computer 32 of Cabot as describing the claimed element (ii). The wake trajectory computer 32 tracks the wake trajectory by storing, in a suitable data storage device 34, a series of data points representing the position of the wake-producing aircraft at a series of

sequential times. In contrast, applicants' vortex generator provide information on the configuration, position of all vortex generators in the vicinity of the aircraft.

The Cabot computer 32 only provides vortex generator data points and does not provide specific information descriptive of all the vortex generators in the vicinity of the aircraft, as described in applicants' specification at page 13, lines 1-3.

(iii)   an informational subsystem (3) of ambient parameters capable of receiving, saving and providing the user with information on ambient conditions in the aircraft vicinity at ~~the~~ <u>a</u> <u>forecasted time of the aircraft passage through a</u> <u>simulated control plane</u>;

The Examiner cites wind velocity computer 40 as describing the claimed element (iii). The wind velocity computer 40 is operable to compute the magnitude and direction of the local wind velocity V.sub.WIND relative to inertial reference by vectorially subtracting the inertial velocity vector from a relative air velocity vector whose magnitude is the true air speed V.sub.TAS and whose direction can be determined using standard equations based on the aircraft attitude supplied by the positioning unit 28 and the angle of attack and sideslip angle supplied by the orientation detector 38.

In contrast, applicants' subsystem 3 computes the wind velocity components in the inertial frame at different altitudes in the region of the wake vortex presence, as well as the ambient turbulence, as described in applicants' specification at page 5, lines 26-27. Moreover, the environment conditions are determined at a forecasted time described

in the specification at page 7, lines 26-27 as passage of the aircraft through a simulated

control plane.

The Cabot wind velocity computer does not compute wind velocity components

at different altitudes in the region of the vortex generator or the turbulence at a forecasted

time.

(iv)   a subsystem (4) responsive to warning the users against a risk of

the aircraft encounter with danger areas generated by a vortex generator wake

vortices at the forecasted time;

The Examiner cites a wake warning and caution unit 44 as describing the

claimed element (iv). The warning system 44 is operable to compare the distance

or the time to closure with one or more predetermined threshold values, and to

cause an indication of proximity to the wake volume to be annunciated if the

distance or time to closure is less than the threshold operable to compare the

distance or the time to closure with one or more predetermined threshold values,

and to cause an indication of proximity to the wake volume to be annunciated if

the distance or time to closure is less than the threshold.

In contrast, applicants warning system (4) alerts the users against the possibility of

the aircraft encountering with wake vortex danger areas generated by a vortex generator at the

forecasted time chosen by the users, as described in applicants' specification at page 5, lines 9-

10.

The Cabot warning unit 44 does not inform the user of encountering danger areas

at a forecasted time chosen by the user.

(v)   a user subsystem (5) capable of receiving, saving and providing the

users with information from other subsystems and forming the a instructive signal

for the aircraft evasion maneuver ensuring the aircraft evasion from ~~the~~ a vortex

generator danger areas during the chosen by the user delay time after the user

receives the warning signal about a risk of the aircraft encounter with vortex

generator wake vortices at the forecasted time;

The Examiner cites visual indicator 46 and aural indicator 48 and column

9, lines 17-30 of Cabot as describing the claimed element (v). The indicators 46

and 48 only provide visual and aural indication. The cited text describes

programming the warning unit 44 to ensure adequate separation between the

protected aircraft and the wake.

In contrast, applicants subsystem 5 receives information from other subsystems

and forms a signal recommending aircraft evasive maneuver during the chosen user period of

time after the warning, received by the user, on the possibility of entering the   vortex

generator wake vortex danger area at the forecasted time;

The Cabot indicators 46 and 48 and column 9, lines 17 do not provide

information from other subsystem or a signal recommending aircraft evasive

maneuver at a <u>forecasted time,</u> as described in applicants' specification at page 5,

lines 18-20.

(vi)   a communication subsystem (6) ensuring integration of the

subsystems into ~~the~~ a united complex, and

Cabot describes a communication system for a similar purpose.

(vii)   said informational subsystem (1) of the aircraft parameters ensures

receipt, processing, saving, and transmitting information to the warning subsystem at

least on the aircraft configuration, coordinates and attitude in the inertial frame, on the

aircraft velocity and angular rate components in the aircraft frame;

Cabot provides positioning information to aircraft position computer 30 and wind velocity computer 40, whereas, applicants provide aircraft information to a warning system, as previously indicated in the consideration of claim element (i).

(viii)   said informational subsystem (2) of vortex generators ensures receipt, processing, saving, and transmitting information to the user at least on the vortex generator types, coordinates and attitude, velocity and angular rate components in the inertial frame;

The Cabot only provides vortex generator data points and does not provide specific information descriptive of all the vortex generators in the vicinity of the aircraft, as previously indicated in the consideration of claim element (ii).

(ix)   said informational subsystem (3) of ambient parameters ensures receipt, processing, saving, and transmitting information to the user at least on ~~the~~ a wind velocity components in the inertial frame at different altitudes in the region of the wake vortex presence, as well as on ~~the~~ an ambient turbulence;

Cabot does not compute the wind velocity or ambient turbulence at a forecasted time, as previously indicated in the consideration of claim element (iii).

(x)   said warning subsystem (4) informing the user on a possibility of the aircraft encountering with the vortex generator danger areas performs at least calculation of the vortex generator wake vortex danger area position and intensity, the area of the aircraft forecasted positions at the forecasted time and directs to the

user subsystem information on a possibility of the aircraft encountering with the

vortex generator wake vortex danger areas at the forecasted time;

Cabot does not inform the user of encountering danger areas at a forecasted time

chosen by the user, as previously indicated in the consideration of claim element (iv

(xi)   said user subsystem (5) receives, processes, saves and indicates the

information from the warning subsystem at least on ~~the~~ a nulling of the distance from

the area of the aircraft forecasted positions to the vortex generator wake vortex danger

area at the forecasted time and forms a signal indicating the change of the aircraft

position providing the increase of the above mentioned distance.

Cabot does not provide a signal recommending aircraft evasive maneuver

at a forecasted time, as described in applicants' specification at page 5, lines 18-

20.

Summarizing, Cabot fails to disclose providing (1) aircraft information to a

warning system; (2) specific information descriptive of all the vortex generators in the

vicinity of the aircraft; (3) wind velocity components at different altitudes in the ;

(4) a user of the aircraft encountering danger areas at a forecasted time of an aircraft

passage through a simulated control plane, and (5) a signal recommending aircraft

evasive maneuver at a forecasted time.

Claim 23 describes subject matter not disclosed in Cabot as indicated above. The

rejection of claim 23 is with out support in prior art. Withdrawal of the rejection under 35

USC 102 (b) and allowance of claim 23 are requested.

E.   Claim 24:

Claim 24 depends from and further limits claim 23 and is patentable over

Cabot on the same basis as claim 23.

Withdrawal of the rejection and allowance of claim 24 are requested,

III.   <u>Consideration of Prior Art Not Relied Upon:</u>

A.   Holforty et al (USPAP 20030222795):

Holforty discloses a dynamic wake avoidance system utilizing aircraft and atmospheric parameters to model and predict airborne wake vortices in real time.

B.   Kuntman et al (USPAP 20020075171) :

Kuntman discloses applying position and aircraft type information, elevation above a terrain and configuration of another aircraft to a algorithm for predicting the location of a wake vortex of the other aircraft.

There is no disclosure in Holforty or Kuntman relating to encountering danger areas at a forecasted time of the aircraft passage through a simulated control plane, and providing a signal recommending aircraft evasive maneuver at a forecasted time.

<u>FAILURE TO ACKNOWLEDGE 35. U.S.C. §119 PRIORITY</u>

We bring to the Examiner's attention the failure to acknowledge 35 U.S.C. § 119 priority in this application. This application is filed under 35 U.S.C. § 371 of PCT/RU03/00334. The domestic priority date of filing under 35 U.S.C. § 119 is July 25, 2003. Applicants hereby request acknowledgment of the priority application.

CONCLUSION

Applicants have distinguished Claims 23-24 based on features identified in the claims and not disclosed in the cited art; amended the specification and claims to over come the objections and rejection under 35 USC 102; considered the cited but not applied prior art and attached a Terminal Disclaimer to overcome a double patent rejection. Applicants request withdrawal of the objections and rejection; allowance of claim 23-55 and passage to issue of the application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Preliminary Amendment, or credit any overpayment, to Deposit Account No. 13-4503, Order No. 5106-0003. A DUPLICATE OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: October 2, 2008   By: _Joseph C. Redmond, Jr_

Joseph C. Redmond, Jr.
Registration No.
(202) 857-7887-Telephone ; 202-857-7929 - Fax

Correspondence Address:
MORGAN & FINNEGAN, L.L.P.
3 World Financial Center
New York, NY 10281-2101

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